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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,458	11/19/2003	Norihiko Saito	10517/200	3917

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EXAMINER
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CHUO, TONY SHENG HSIANG

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/715,458

Applicant(s)

SAITO ET AL.

Examiner

Tony Chuo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/6/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/19/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Claims 1-19 are currently pending in this application. The objection to claims 1, 2, and 10 is withdrawn. The rejection of claims 2, 12, 14, and 15 under 35 USC 112 is withdrawn. Claims 1-19 do not overcome the previously stated 102 and 103 rejections. Therefore, claims 1-19 stand rejected under the previously stated 102 and 103 rejections.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7, 11, and 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Fuglevand et al (US 6096449). Regarding the amended claims 1 and 16, the Fuglevand et al reference discloses predetermined performance parameters that are determined by operational history of the fuel cell (See column 8, lines 9-15). These predetermined performance parameters are equivalent to the predetermined operation patterns claimed by the applicant. In addition, the Fuglevand et al reference also discloses operating conditions such as voltage and current outputs that change the operational state of the fuel cell according to the predetermined performance parameters (See column 8, line 9-13). It also teaches a fuel cell and a method of controlling the fuel cell that comprises a controller which operates the fuel cell according

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to a predetermined operation condition and diagnoses a state of the fuel cell by detecting a change in the operational state of the fuel cell and comparing the change in the operational state to a predetermined operation condition (See column 2, lines 41-45). It also teaches a controller that diagnoses the state of the fuel cell upon sensing a given output voltage, output current, or an open state voltage at the voltage and current sensors and causes the valve to be adjusted into a predetermined fluid metering relationship relative to the supply of the fuel gas which increases or decreases the flow amount of fuel gas (See column 3, lines 19-26). It also teaches a controller that determines whether there is a mechanical failure or deterioration due to a change in the output voltage that is less than a predetermined value (See column 8, lines 16-29).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuglevand et al (US 6096449) in view of Bai et al (US 6620538). The Fuglevand reference is applied to claims 1-7, 11, and 16-19 for reasons stated above. However, it does not expressly teach a temperature adjusting device and a controller that detects the internal resistance or temperature of the fuel cell, diagnoses the state of the fuel cell based upon the resistance or temperature and operates the fuel cell according to a predetermined temperature pattern. The Bai reference does teach temperature sensors

"46" and a controller that determines the resistance of the fuel cell, detects the temperature of the fuel cell, diagnoses the state of the fuel cell based upon these parameters and operates the fuel cell according to a predetermined temperature level (see Figure 16 and column 6, lines 20-25 and column 12, lines 31-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Fuglevand fuel cell to include temperature sensors and a controller that detects the resistance and temperature of the fuel cell, diagnoses the state of the fuel cell based upon these parameter and operates the fuel cell according to a predetermined temperature level in order to improve the performance of the fuel cell by more accurately determining the operating state of the fuel cell.

6. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuglevand et al (US 6096449) in view of Iwasaki (US 6447939). The Fuglevand reference is applied to claims 1-7, 11, and 16-19 for reasons stated above. However, it does not expressly teach a fuel cell installed on a moving object, a power adjusting portion connected to an output terminal of the fuel cell, and a fuel gas supply portion. The Iwasaki reference does teach a fuel cell "21" installed on a vehicle, a electrical power adjuster "31" connected to an output terminal of the fuel cell, and a fuel gas supply "1", "3", "5" (see Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to install the Fuglevand fuel cell in a vehicle with a electrical power adjuster and a fuel gas supply in order to provide an electrical power distribution system for a vehicle capable of achieving sufficient running performance.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fuglevand et al (US 6096449) in view of Iwasaki (US 6447939) as applied to claims 12-14 and in further view of Yoshizawa et al (US 2003/0003334). However, the references do not expressly teach a cooling system which cools the fuel cell. The Yoshizawa reference does teach a cooling system "22", "23", "24" which cools the fuel cell "20" (see Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Fuglevand fuel cell system to include a cooling system in order to improve the performance of the fuel cell by maintaining a heat balance between the heat generated by the fuel cell and the heat radiated by the cooling system.

#### ***Response to Arguments***

8. Applicant's arguments filed 6/6/06 have been fully considered but they are not persuasive. Regarding the amended claims 1 and 16, the Fuglevand et al '449 reference discloses predetermined performance parameters that are determined by operational history of the fuel cell. These predetermined performance parameters are equivalent to the predetermined operation patterns claimed by the applicant. In addition, the Fuglevand et al '449 reference also discloses operating conditions such as voltage and current outputs that change the operational state of the fuel cell according to the predetermined performance parameters. Fuglevand et al '449 disclose that the operational parameters which are monitored, tend to suggest that a selected fuel cell is beginning to fail, and should be disconnected from the stack for repair or replacement if the shortcoming performance is severe (See column 8, lines 23-32). Therefore, Fuglevand et al provide specific guidance to monitor and control fuel cell operation

based upon predetermined parameters, to change fuel cell operation according to the monitored parameters; and to further diagnose the fuel cell failure state accordingly. Hence, Fuglevand et al provides the necessary functional interrelationship to satisfy the claimed requirement.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for


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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

  
RAYMOND ALEJANDRO  
PRIMARY EXAMINER